

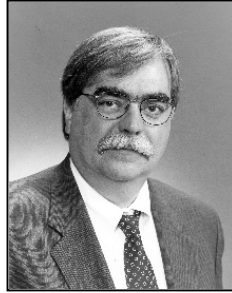
NIST Update

Arden Bement
Director

Visiting Committee on Advanced Technology

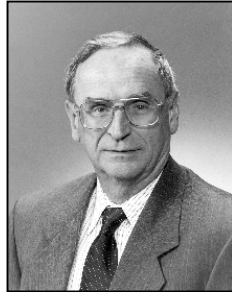
March 5, 2002

2002 VCAT Members



Welcome back to our
returning members:

- Juan Sanchez (Chair)
- Deborah Grubbe
- Lloyd Harriott
- Caroline Kovac
- Tom Manuel
- Wayne Pitcher
- Raymond Salemme
- April Schweighart
- Masayoshi Tomizuka



Welcome to our new
nominees:

- Rick Gross
- Gary Floss

NIST Leadership Changes



Dr. Dale Hall
Appointed Acting Director
Manufacturing Engineering Laboratory



Dr. Bill Mehuron
Announced retirement as Director
Information Technology Laboratory



Department of Commerce



Donald Evans
Secretary

**Secretary
Deputy Secretary**

Chief of Staff



Dr. Samuel Bodman
Deputy Secretary

**National Oceanic
and Atmospheric
Administration**

**Patent and
Trademark Office**

**National
Telecomm. & Info.
Administration**

(Other bureaus)

**Technology
Administration**

**National Technical
Information
Service**

**Office of
Technology Policy**

**National Institute
of Standards and
Technology**



Phillip Bond
Under Secretary



Dr. Arden Bement
Director



Dr. Karen Brown
Deputy Director

2001 Malcolm Baldrige Quality Awards

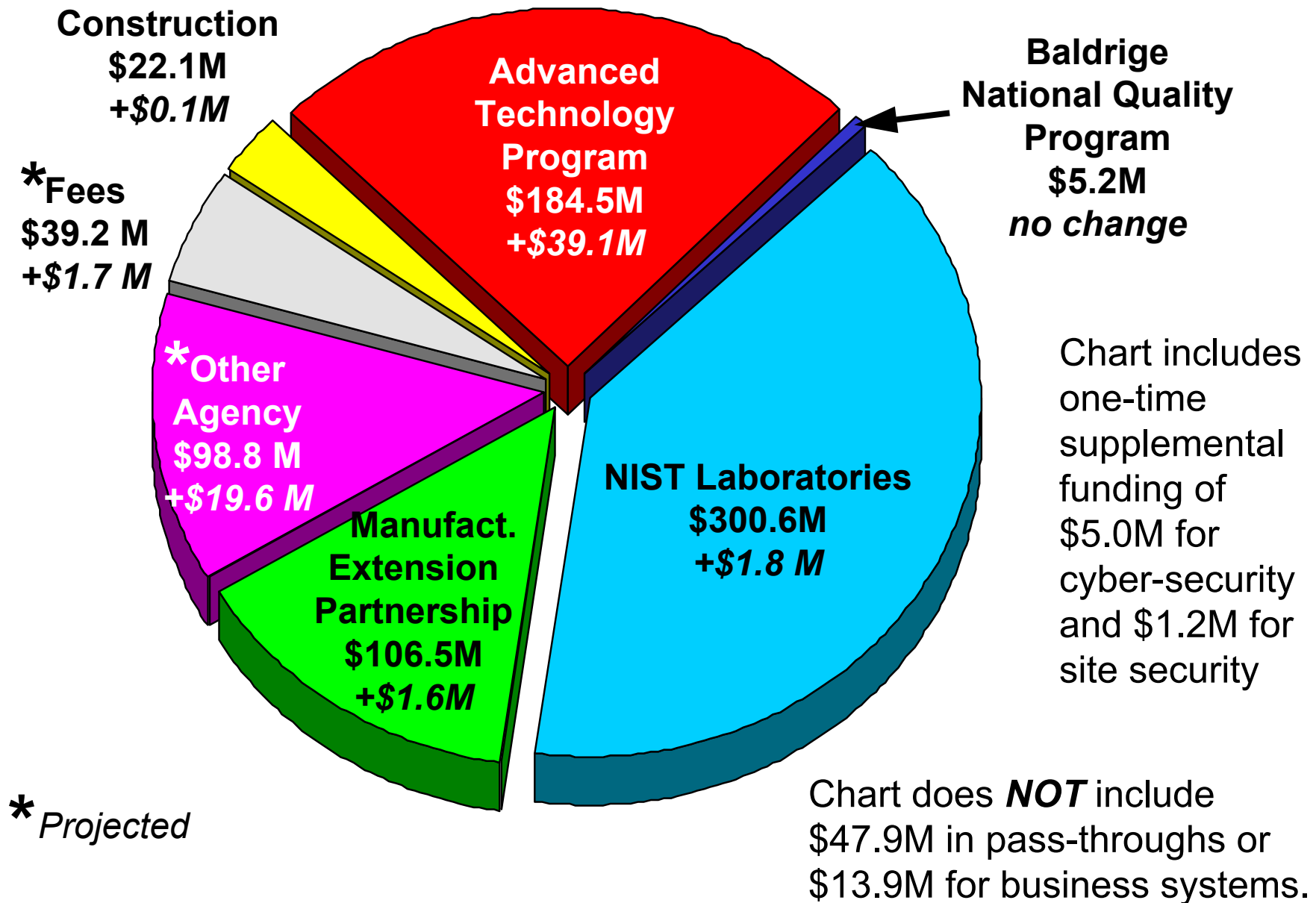
- Clarke American Checks, Inc., San Antonio, TX – manufacturing.
- Pal's Sudden Service, Kingsport, TN – small business.
- Chugach School District, Anchorage, AK – education.
- Pearl River School District, Pearl River, NY – education.
- University of Wisconsin-Stout, Menomonie, WI – education.



*Awards Ceremony March 7
with President Bush and
Commerce Secretary Evans*

April 6, 2001 Award Ceremony

NIST FY2002 Estimated Budget



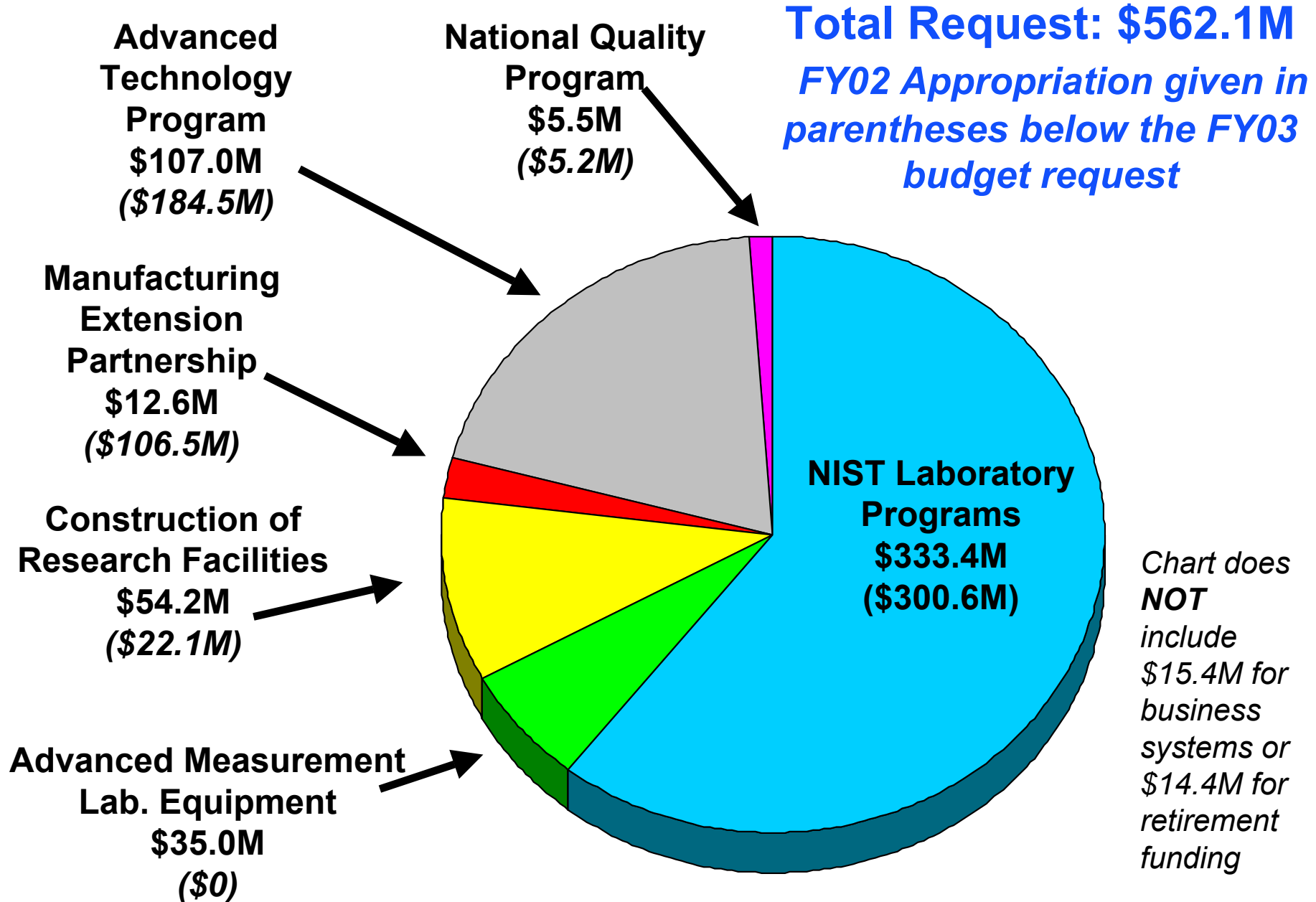
President's Priorities for FY2003

- **Win the war on terrorism**
- **Strengthen the protection of our homeland**
- **Revitalize the economy and create jobs**

President's FY2003 Budget Request for NIST

- Strengthen the [NIST Laboratories](#) to provide measurements, standards, and data needed to support counter-terrorism, homeland security and long-term economic growth through technology advances in key areas.
- Reform the [Advanced Technology Program](#) improve the program and build sustainability.
- Sunset the federal cost-share for mature [Manufacturing Extension Partnership](#) centers.

President's FY2003 Budget Request for NIST



Major Theme: Strengthen the NIST Laboratories

- Strengthen the **NIST Laboratories** to provide measurements, standards, and data needed to support counter-terrorism, homeland security and long-term economic growth through technology advances.
 - Equip the Advanced Measurement Laboratory for success.
 - Adequately fund research facilities to support core measurement and standards mission.
 - Initiate or strengthen core measurement and standards technical programs in key areas.
 - Health care, nanotechnology, cyber-security, homeland security, measurements and research using neutrons, Competence funding for new programs, etc.

Strengthen the NIST Laboratories

Equip the Advanced Measurement Laboratory for success.

- **AML will be world's best measurement laboratory when completed in 2004.**



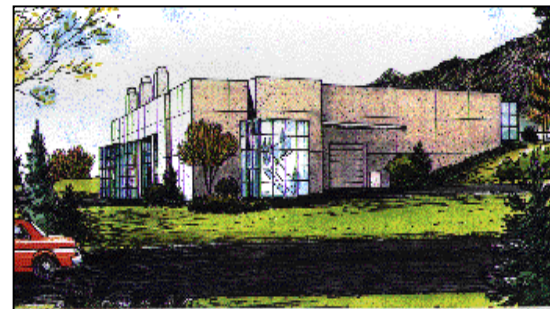
- **Measurement and standards support for key technologies of the new century: nanotechnology, biotechnology, information technology, homeland security, etc.**

NIST solutions

- **\$35.0M one-time cost for the most critically needed advanced measurement and research equipment for AML.**
- **\$15.0M one-time cost for AML fitup and relocation.**

Strengthen the NIST Laboratories: Adequately Fund NIST Facilities

Adequately fund NIST facilities to support core measurements and standards mission.



- Boulder Laboratories oldest and most inadequate for core mission needs.
- NIST maintenance investments well below benchmark for maintaining research labs: 2% to 4% of replacement cost per year.

NIST solutions

- \$17.3M to begin highest priority Boulder, Colorado construction (begin construction of central utilities plant, construction of new primary electrical service).
- \$0.5M increase in maintenance funds to total of \$22.2M for safety, maintenance, and major repairs at both NIST campuses (about 1% of replacement costs).

Strengthen the NIST Laboratories: Homeland Security

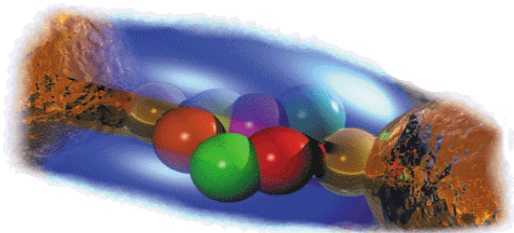


- **\$2 million as part of a proposed broad public/private partnership to investigate the probable technical causes of the World Trade Center collapse and apply lessons learned to protect buildings and occupants in the future.**

- **\$2 million to strengthen the security of critical infrastructures, including computer systems controlling utilities and building supervisory control systems.**
- **\$1 million for Computer Security Expert Assist Team (CSEAT) to help federal agencies identify and fix their information system vulnerabilities on a reimbursable basis. NIST funding for program development and administration.**



Strengthen the NIST Laboratories: Supporting Technology Advances



- **\$4 million to strengthen successful programs in nanotechnology measurements and standards.**

- **\$3 million to strengthen support of health care measurements and standards to reduce costs and improve effectiveness of diagnosis and treatment.**
- **\$4.7 million for Competence program to build next generation measurement and standards capabilities.**



- **\$6 million to upgrade NIST Center for Neutron Research (NCNR) – a unique national user facility supporting use of neutrons for R&D in biology, chemistry, new materials, physics, many other fields. Increase number of users by 25%.**

Advanced Technology Program

President's FY 2003 Request: \$107.9 million

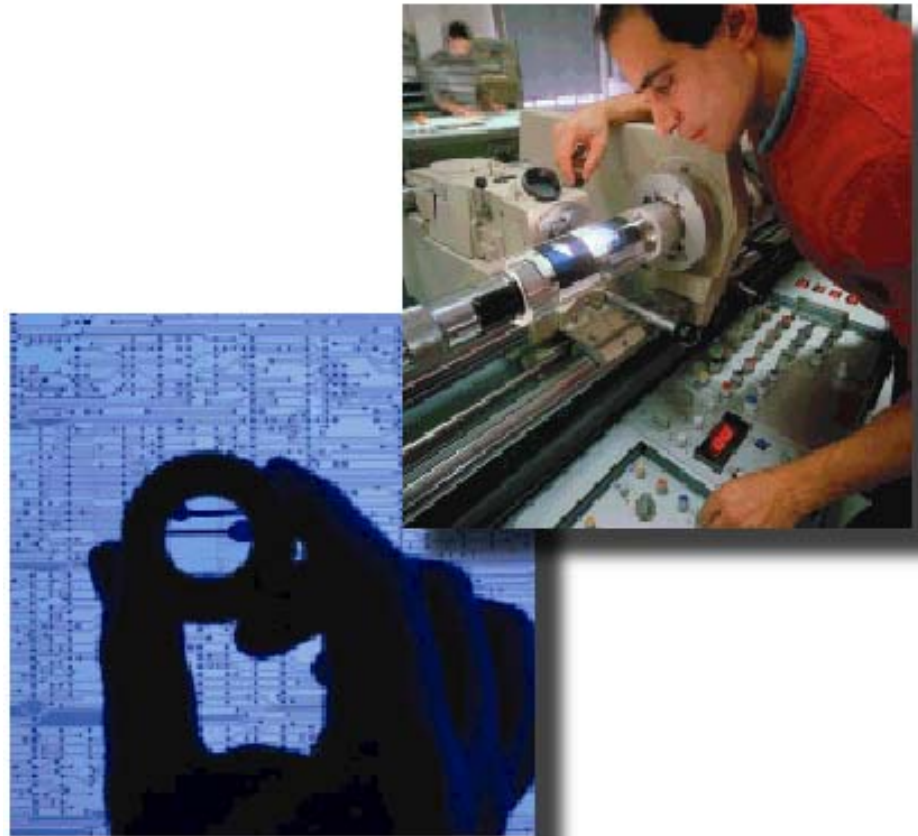
- **Will permit approximately \$35 million in new FY 2003 awards and continue to fund prior awards.**
- **Secretary has carefully evaluated ATP and recommends several changes to strengthen the program.**
 - **ATP Director Marc Stanley will discuss the proposed ATP reforms in later presentation.**



Sunset Federal Cost Share for the Manufacturing Extension Partnership (MEP) Program

President's FY 2003 Request: \$12.9 million

- More than 400 centers and offices in all 50 states and Puerto Rico operated with federal/state/local cost share.
- Centers more than six years old will no longer receive federal funding.
- Budget request will fund central federal MEP activities and federal share of newer centers.
 - Two newer centers would continue to be funded: SE Ohio and Indiana.

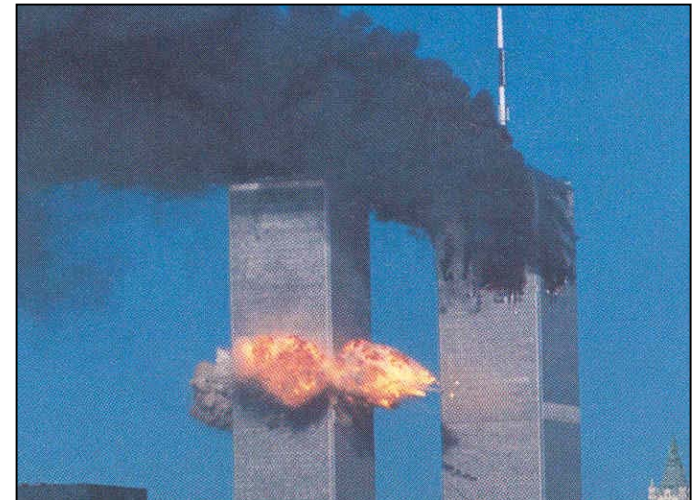


Homeland Security Activities Update

Building and Fire Issues

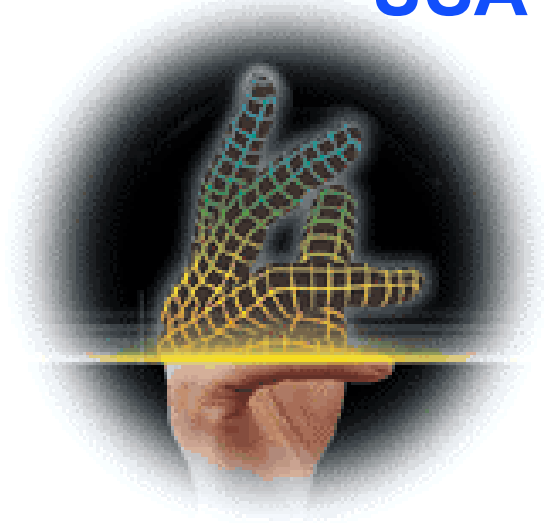


- NIST receives about 30 pieces of steel from World Trade Center towers.
- Stored in controlled environment on NIST campus in preparation for possible investigation into the probable technical causes of the WTC collapse.
- Simulation of fire and smoke movement in WTC Towers.
 - Estimate heat release rate ($\sim 3\text{GW}$)
 - Estimate consumption of fuel in fireball and fuel remaining in building.
 - Estimate maximum temperature in North Tower ($\sim 900\text{ C}$)



Homeland Security Activities Update

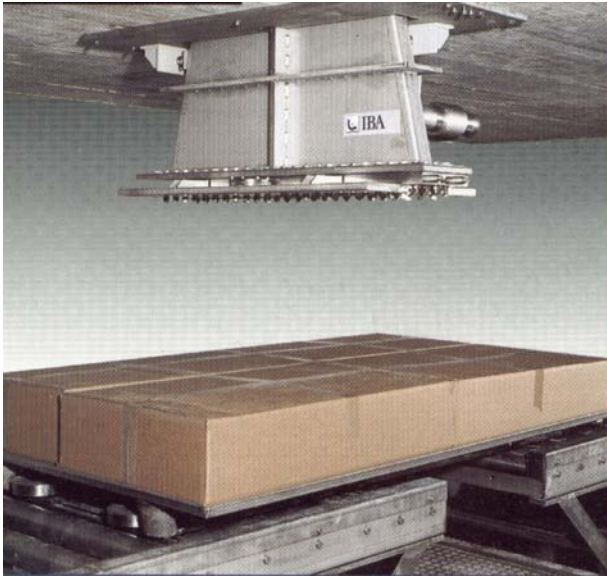
USA PATRIOT Act of 2001



- “Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism”
- Mandates NIST to work with Departments of Justice, State, and other agencies to “develop and certify a technology standard” for biometric identification of visa applicants and persons entering the US.
- Law requires standard to enable cross-agency, cross-platform sharing of electronic law enforcement and intelligence information.
- Conservatively estimated to be a \$2 billion system when implemented.

Homeland Security Activities Update

Mail irradiation



- NIST collaborated with Armed Forces Radiobiology Research Institute to identify volatile organic compounds (VOCs) produced by high intensity irradiation.
- NIST worked with irradiation facility and US Postal Service to find ways to minimize VOC production and effects.
- NIST is working with US Postal Service and irradiation facility to develop protocols for use of high-energy x-rays for sterilization of packages.
 - 50,000 potentially contaminated packages and 100,000 new packages stored at Brentwood facility.

New Broadband Wireless Standard



- First broadband wireless standard from an accredited standards body.
- Working Group chaired by NIST.
- Open-consensus process involving world's leading wireless operators and vendors.

- Standard enables interoperability among devices from manufacturers around the globe.
- Foster the use of microwaves as an economic alternative to cable or fiber optics for connecting users to the Internet and other high-speed public networks.



Bower Award – Franklin Institute



John Cahn
NIST Materials Science and
Engineering Laboratory

*2002 Bower Award and Prize for
Achievement in Science
Franklin Institute*

“For profound contributions to the understanding of the thermodynamics and kinetics of phase transformations. His lifelong dedication to understanding materials has inspired generations of scientists and engineers to develop new materials based on his groundbreaking theories.”